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DOI: https://doi.org/10.1111/add.13331

LETTER TO THE EDITOR

Author's response on Arria (2016): Intention matters – using the terminology 'pharmacological neuroenhancement' as a behavioral definition based on the assumed functionality

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Conflicts of interest

None

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Date: 29.01.2016

Abstract

Non-medical prescription drug use can be defined as 'pharmacological neuroenhancement' if the purpose of use is enhanced performance at work or while studying. However, 'pharmacological neuroenhancement' refers to the intention of use without judging the actual effects on cognitive performance or mood.

Keywords

Pharmacological neuroenhancement, cognitive performance, mood

Author's response

Arria's commentary (1) highlights important difficulties when comparing prevalence estimates of psychoactive substance use for the purpose of enhanced performance at work or while studying. In her commentary, she listed many important reasons for differences in prevalence estimates across various settings, which are in accordance with the reasons identified in our Introduction (2) as well as in our previously published overview paper on pharmacological neuroenhancement (3). We agree that every research paper has to consider environmental-level and individual-level factors that can cause differences in prevalence estimates. This is particularly important, as most studies on pharmacological neuroenhancement show a lack of representativeness of samples and specify mainly students' use (2,3). However, significant differences in the definition of the construct, the inclusion criteria chosen and the substances included in the studies are the main reasons for different prevalence estimates (3). Therefore, we have proposed a clear definition, classifying the misuse of prescription or recreational drugs for the purpose of enhanced cognition, mood or pro-social behavior (4) as 'pharmacological neuroenhancement' (3).

'Pharmacological neuroenhancement' has emerged as one of the main terminologies in the scientific debate on psychoactive substance use for the purpose of cognitive and mood enhancement. At the same time, cognitive enhancement can be understood traditionally as the purpose of the treatment of neuropsychiatric disorders, yet also as the purpose of psychoactive substance use among healthy people aiming at enhanced performance (5). However, the use of a behavioral definition based on the assumed functionality (6) does not necessarily imply the actual effectiveness of the substances used. Dose and differential drug sensitivity are reasons for no or even negative effects on cognitive performance (4,7). This calls for a responsible transfer of knowledge regarding the putative effects and potential side effects of psychoactive substance use for neuroenhancement purposes through scientific institutions, health professionals, companies, universities, friends and families of users (3). Given that

the terminology ‘non-medical drug use’ often also refers to drug use for recreational purposes (e.g., at parties) (8), we suggest choosing the more specific term ‘pharmacological neuroenhancement’ based on the user’s intention.

In addition, recent research has mainly focused on pharmacological cognitive enhancement, although mood enhancement is more common among employees in the general population (2,9). Considering both enhancement forms at a population level, we have carefully addressed the associations with stress, self-efficacy, and illegal drug use (10). We found a large gap between healthy, self-confident users experiencing temporary stress and self-medicating moderately and unconfident users with persistently low self-efficacy and high stress, due partially to pathological symptoms, using psychoactive substances as a serious self-medication (10). Thus, future research should concentrate on complex problems in individuals with low self-efficacy, insufficient coping strategies, and/or mental disorders who self-medicate without or beyond an indicated prescription. The preservation and recovery of health of vulnerable groups in the public should, therefore, be the main focus of attention.

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